Hovden Cannery
886 Cannery Row
Monterey
Monterey County
California

HAER No. CA-11

HAER
CAL,
27-MONT,
44-

PHOTOGRAPHS

HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service, Western Region
Department of the Interior
San Francisco, California 94102

HISTORIC AMERICAN ENGINEERING RECORD

Western Region

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The Hovden Cannery

Location:	At the extreme northwest end of Cannery Row Street, Monterey, California; present address 886 Cannery Row, Monterey, California. lat: 36° 37' 6" N long: 121° 54' 2" W
Date of Construction:	1916. Reconstructed in 1922; following fire.
Present Owner:	Stanford University Stanford, California 94305
Present Use:	Abandoned and condemned. Proposed site of public aquarium.
Significance:	The Hovden Cannery was one of the oldest and largest canneries of the Pacific Sardine Fishery. Its heyday in the first half of the 20th Century marked one of the most lucrative national fisheries and an era of literary significance in the works of John Steinbeck. Its founder, Knute Hovden, was a leading innovator in canning technology.
Historian:	Donald Fitzgerald, November, 1979. Carroll W. Pursell, Jr., Principal investigator.

INTRODUCTION TO THE STORY OF HOVDEN CANNERY

Studying the crumbling remains of one building on Cannery Row leads to the realization that there is significance not only in the building, but in the technology and process which it housed, as well. Initial examination of the Hovden Cannery reveals a confusion of structures which have been enlarged, modified and revised, until it is difficult to find the lines of the original buildings. The structures have been added to in all dimensions: walls have been lengthened and heightened, floors and roofs have been added and extended, foundations abandoned to newer, or patched up and repaired, delaying the inevitable corrosion of the elements. However, this process of midification, if not completely fathomable, is extremely important because it reflects significant modifications to sardine canning process which occured over the years.

A description of the present structure of the Hovden Cannery, stripped as it is of the machinery, processing tables, conveyor belts, scales and other paraphenalia of the fish canning process, describes only an empty shell. It is when accompanied by a description of what took place within these cavernous rooms and dark recess, that the true significance of the cannery is realized. Therefore, in describing the Hovden Cannery, this report will include the process and technology of the sardine canning industry.

This is also appropiate in view of the major contribution which Knute Hovden made to this process. He was a major force in changing the canning procedure from what had been a short step away from a "hand crafted" operation to what became a highly mechanized, quantity production oriented industry.

It is also important to mention what has happened in reoent years to the canneries of Cannery Row. At the height of the sardine canning industry (the period during and subsequent to World War II,) there were twelve canneries and two waste products plants operating on Cannery Row, with a total of thirty nine in the Monterey area[1]. As of the date of this report, most of these canneries have been vacated (and vandalized,) converted to other commercial uses, burned down or partially gutted, or demolished in order to prevent collapse, fire or injury to trespassers.

The Hovden Cannery building is one of the few structures still standing on Cannery Row. However, it is typical of those canneries which the Monterey Cannery Row Plan of 1973 called "virtually in a state of ruin."[2] This situation is compounded by a daily stream of trespassers, seeking to satisfy curiosity, gain a memento, or steal whatever is valuable for resale.[3] With the real possibility of collapse, fire, or demolition for safety, the Hovden Cannery as it stands today--empty, unprotected and vulnerable--leads a precarious after-life.

THE CALIFORNIA SARDINE FISHERY-ITS RISE AND FALL

The Pacific sardine fishery once inhabited the coastal waters of western North America from British Columbia to Baja California. Because the sardine is a pelagic, or free roaming fish, the actual number contained in the coastal waters can only be estimated from the numbers caught. During the 1916-1917 season, 27,000 tons of sardines were landed at California ports. By the mid 1930's, the catch had grown to more than 500,000 tons, and that level was sustained for a decade. This abundant fishery supported a canning and by-products industry in California that reached an annual value of $50 million. It became the largest and most valuable single-species fishing industry in the United States.

During the approximately twenty five years of growth and sustained abundance following World War I, sardine canneries thrived on the central and southern California coasts. They canned sardines foe domestic and foreign markets, and also reduced them to fish oil and meal for industrial and agricultural uses. With sustained high catches considered a sign of a healthy fishery, canners continued to call for tremendous quantities of fish for their processing plants, and fishermen quite willingly delivered them.

During this time of plenty, fish researchers began warning that adult sardines were disappearing from the fishery and that loss of these reproducers of the stock was the first sign of impending depletion. Canners and fishermen however continued their efforts to fill the demands of the market place. The Legislature and the California Fish and Game Commission, with their dual and conflicting roles of encouraging the growth of the fishing and canning industry, while charged with the protection of the fishery, accomplished no limiting legislation.

When the adult sardines had been eliminated and the catch started to diminish, fishermen and canners turned to researchers and cooperative methods, to find ways not to save the fishery, but to increase its productivity.

A high output prevailed until after World War II, but then a sharp decrease in the annual catch occurred. In a few years, it became evident that the sardine fishery was disappearing. By 1953, the annual catch had dropped to just over 5,000 tons, and except for a few temporary upturns, it continued to decline. In 1968, when fewer than 100 tons of sardines were caught in California waters, a commercial use moratorium was enacted by the legislature.

As the story of the sardine fishery unfolds, it becomes evident that its dissappearance is the result of many factors besides the demands of the canning industry. The reduction of whole fish to oil and meal soon came to play a primary role, as

did the twice imposed heavy demands for sardines during the two World Wars. However, the primary reason that the sardine fishery was allowed to be exploited nearly to extinction is that those charged with its conservation were also intent on its expansion and development. Thus, the fishery became a pawn in the struggle between conservtion and exploitation.

CANNERY ROW - A BRIEF HISTORY

The primary purpose of this report is the documentation of a single building. However, much of the significance of the Hovden Cannery lies in the fact that its history spans the era during which the Cannery Row sardine industry was born, expanded to the dizzying heights of a $1,000,000 annual buisness, and in a period of approximately twenty years, collapsed and completely disappeared.

The earliest inhabitants of the stretch of rocky shore line along which Cannery Row eventually grew, were probably the Tamotk and Rumsen Indians, of the Costanoans. They settled on nearby Presidio Hill, an archaeologist's findings of fish hooks and abalone shells indicate they probably fished the waters adjacent to Point Alones (abalones), the present location of the Hovden Cannery.

The Chinese established a fishing village among these same rocks in 1853, choosing for their settlement the protected beach between Point Cabrillo (site of the Hopkins Marine Station,) and Point Alones. Harvesting fish, squid and abalone, the Chinese fishing community by 1880 prospered, reportedly second only to San Francisco in volume and value of catch. This prosperity, combined with the social, cultural (and in the minds of some, moral) characteristics of the Chinese settlement, soon led to friction with local fishermen and townspeople, especially many members of nearby Pacific Grove Methodist Community. The Chinese village was mysteriously burned to the ground on May 16, 1906, resulting in the movement of its inhabitants a few miles west to Pescadero Point, on the present "Seventeen Mile Drive" near the Del Monte Properties' "Pebble Beach".

In 1895, Frank E. Booth built the first Cannery on the Monterey Peninsula. In addition to being the first cannery in the area, Booth also provided the first local market for fish caught in Monterey Bay. Up to that time, Monterey fish were purchased by brokers for resale in San Francisco, a system quite favorable to the brokers. Booth's cannery provided the fishermen a market to which they could sell directly, permitting them to enjoy more of the profits of their labor.

Salmon was the fish most often caught in the bay, and thus the product the Cannery primarily packaged, as Booth had done formerly in Pittsburg, California. Booth also experimented with canning sardines, which at that time were caught primarily for salmon bait or by local citizens for sport. By 1902, Booth was canning 3.000 cans of sardines a year. As a result, he cut back on the amount of salmon he purchased from local fishermen. His cannery burned down the following year, a result, according to some, of the resentment of the salmon fishermen. Booth rebuilt the cannery at the same location in 1903, at the foot of the Monterey commercial pier, not far from the old Customs House.

By 1905, Booth had hired Knute Hovden and Pietro "Pete" Ferrante, who came to Monterey from the Pittsburg plant. Their cumulative entrepeneurship, ingenuity, and knowledge of fishing led to changes in the technology of fishing which "completely revolutionized commercial fishing in California and represented the first stage in the evolution of sardine fishing operations in Monterey Bay."[4] Their success was also a first step toward Ocean View Avenue officially being renamed "Cannery Row" by the City of Monterey in 1953.[5]

Booth, Hovden and Ferrante decided to introduce lampara nets from Sicily to the Monterey fishermen.[6] Until this time, fish were caught in small gill nets stretched between two anchored points. Fish swam into the net and were trapped by their gills until extricated by hand when the fishermen periodically checked their nets. The lampara is a long, wing shaped net, used in the Mediterranean since before Christ. It has floats on one edge and weights on the other, allowing it to float like a fence just below the surface of the water. The lampara was set in a circle around a school of sardines and the drawn together. The trapped sardines were scopped into a barge for delivery to the pier, and thence to the cannery. The impact of the lampara net on Booth's Cannery was staggering. Boats were now able to deliver twenty five to thirty tons of sardines, more than he alone was able to handle.[8] More canneries were built to handle the surplus.

In 1906 an Indian named Trott built the "Monterey Fishing and Packing Company," the first to compete with Booth.[9] It was the first cannery actually built on Cannery Row, but it soon failed. Later in the year, three former employees of Booth's bought the Trott Cannery, and organized the "Pacific Fish Company".

In 1916, Knute Hovden left Booth and built his own cannery. He selected a site in New Monterey, at the farthest end of Cannery Row, and anchored his cannery on Point Alones, a rocky finger jutting out into Monterey Bay. The area which Hovden chose contained several nearby residences. It was not long

before residents made the first of many futile objections to the noisy , smelly canneries which were beginning to befoul their lovely stretch of beach.[10]

World War I had a tremendous effect on Cannery Row. A severe decrease of European canning activity combined with an increasing call for high protein foods by the U.S. government to create a hugh demand for canned fish. Production on the Row rose from 97,100 cases in 1916, to 798,566 cases in 1919.[11] During this prosperous period, the building, buying and selling of canneries became so frequent, that the growth of Cannery Row is difficult to trace. As an example, the Bayside Fish Company, owned by wealthy Chinese from Oakland, was bought by the Great Western Packing Company in 1918. Great Western, which also owned the Santa Cruz Packing Company in Santa Cruz, California, was in turn purchased by Hovden in 1923. The Pacific Fish Company (formerly the Monterey Fishing and Packing Company) was purchased by the California Packing Company in 1925, and so on.[12]

Hovden faced a setback in 1921, when his cannery burned to the ground. An investigation determined that the cause was arson, which Hovden claimed was the work of a competitor. The conviction of an ex-convict for the crime did little to aid the plight of Hovden, who had already suffered a loss of capital assets amounting to $38,355.00. Insurance covered only part of the loss. Nevertheless, Hovden rebuilt in 1921 at the same site.

From 1921 on, the cannery industry grew almost without interruption for twenty five years, owing to a successful merger of the production of sardines with the practice of reducing them to meal and oil. This process of reduction had begun in Monterey in 1912, when Booth had established the first such plant;[13] but it was not until 1921 that legislation allowed quotas of fish for reduction sufficient to make the process profitable. Eventually, profits from reduction surpassed those from canning.

During World War II, Cannery Row continued to prosper as it had since the 1933 season. Indeed, the twelve years from 1933 to 1945 turned out to be peak years of the sardine catch landed at Monterey (with the exception of the lucrative 1929-1931 period). The wartime period saw several setbacks to the industry, but these were balanced by corrective measures taken by the federal and local governments, and the prosperity continued.

The U.S. Coast Guard requisitioned many fishing boats for wartime service, reducing the size of the commercial fleet. In addition, the wartime internment of Japanese robbed the Monterey fleet of several boat owners and operators. Cannery Row was even more directly affected. Many workers, seeking more stable and lucrative employment, left the canneries for industries more directly related to the war effort.

At the same time, the sardine canning industry benefited from the high ceiling price on sardines set by the Office of

Price Administration. The War Production Board even set aside the entire 1942-1943 catch for government use. Furthermore, although providing sufficient numbers of workers for the canneries continued to be a problem, community efforts to recruit local citizens, and the use of military volunteers, helped keep the canneries operating.

After World War II, Cannery Row began a steady decline which was relieved only briefly by an increase in activity during the 1949-50 season. In 1946 only 243,492 cases were canned, one sixth the number canned in 1945. By 1954 the annual output had fallen to 1335 cases.

During this catastrophic collapse, some of the canneries kept operating by trucking sardines up from Port Hueneme and Santa Barbara. However, this practice ceased due to spoilage and increased costs. The canners also packed other fish, including tuna, mackerel, anchovy, and salmon. For a while, hope for continued cannery activity also lay with squid, which had been fished in Monterey Bay waters since the days of the Chinese fishing village. This transition, underway in 1946, saw eight canneries employing 2,000 workers in the summer "off season", before the winter run of sardines. However, without the great quantities of sardines which, for twenty five years had kept them bustling, the canneries rapidly began shutting doors

Most canneries did not declare bankruptcy; they merely closed their doors, unable to meet operating expenses.[14] From a high of thirteen canneries and seventeen reduction plants operating in 1945, there were only five operating on the Row in 1957. By 1962, the Hovden Plant was the only operating cannery on Cannery Row.

Knute Hovden retired from active participation in operation of the cannery in 1951.[15] At that time, management was assumed by the vice-president of the company, William Lunde, who had been an officer in the company for twenty-seven years.

In 1967, Stanford University acquired the Hovden property through a sale-purchase negotiation, which contained a lease-back provision.[16] This lease was assumed in 1968 by the Wilbur-Ellis Company of San Francisco, which had also purchased the canning equiptment from the Hovden estate, and continued operating the cannery as the "Portola Packing Company". Finally in 1973, the Wilbur Ellis Company transferred its canning equiptment to another plant in Moss Landing, and the old Hovden cannery building has stood empty since. Smoke, odors, noise and hubbub of industry left with the sardines.

Little has been written about Cannery Row itself, except for the two novels, Cannery Row and Sweet Thursday. Even these do not help much to establish the historical context of Hovden Cannery. As Richard Persen points out, Steinbeck did not write about the canneries or their workers, but rather about the

socially outcast inhabitants of the Row. Steinbeck is now firmly linked to the street he made famous, and the public is equally firm in its romanticized version of what Cannery Row was like. Perhaps the popular saying is applicable here: Cannery Row isn't like it used to be, and probably never was.

Today Cannery Row is a thriving, bustling street crowded with tourists arriving by car or discharged from tour buses. They stroll past a variety of restaurant/bars, art galleries, amusement areas (complete with a carrousel and cotton candy) and gift shops of endless variety. Many of these tourist attractions are located in the structures which once housed the canning industry, although the decor of most makes no attempt to reflect former industrial days of the Row.

Monterey has never been a one-industry town, and it does not appear to be suffering today from the loss of the sardine, nor probably has it ever suffered to any great extent. This unusual situation is the result of several events which collectively are responsible for the apparent healthy economic status of Monterey.

The primary factor in Cannery Row's survival was that the phase-out of the canning industry was gradual over a period of years, some say up to twenty.[17] As the sardine catch fell after 1946, the canneries supplemented their production, as they had done in the past, by canning other species of fish, especially squid. In that year, eight canneries were packing squid, and when the Hovden Cannery was last operated by Wilbur-Ellis, it too was canning only squid.

Another element which had been a major factor in a healthy economy in Monterey, has been the continuance of the military establishments in the area. The Army's huge installation at nearby Fort Ord has continued to contribute to the economy since after World War II. Even more directly associated with the local economy are the Navy's postgraduate school and the Department of Defense language school at the Army Presidio, both of which are within the city limits.

Probably the most important reason for Monterey's economic health is the growing number of tourists who flock to the Peninsula area. They come to enjoy the beautiful weather and coastal scenery, the recently completed downtown and waterfront developments, and of course Cannery Row. The refurbished Cannery Row gives a feeling of affluence which stands in marked contrast to Steinbeck's description of "a stink, grating noise" and "an odor of rotting fish and the indescribable smell of fish meal."[18] The small seems to have turned to that of sweet success.

THE SARDINE CANNING PROCESS

The Hovden cannery building is now an empty shell, stripped of its equiptment and machinery. A description of the building is best presented in the context of a description of the canning process itself.

To overcome the difficulty connected with bringing boats loaded with sardines close to the cannery, Hovden erected a stub wharf as far out into the water as possible, terminating the structure with a high tower. From this tower, he strung heavy wire cables to moorings that were placed several hundred feet seaward. The small lampara boats would port directly beneath these cables. Buckets that could hold 615 pounds of sardines were let down on the cables, and when full, were hauled up to the top of the fish tower by power winches operated from the tower.

The fish were then sluiced by gravity flow, through wooden flumes to large rorating wire screen cylinders. Tumbling through these rotating cylinders removed the sardines scales, after which they were sluiced into a series of square redwood holding tanks of five tons capacity each. Fresh water was constantly pumped through the tanks, keeping the fish cold and fresh until they were transported to the next stage in the process.

In 1927 Hovden added another method of unloading fish from the boats, by using a centrifugal pump.[19] This pump, driven by a 30 h.p. electric motor, connected eight-inch metal and flexible rubber piping to the bottom of two v-shaped eight-foot by eighteen-foot floating wooden hoppers, which were anchored about 500 feet from shore in forty feet of water.[20] Boats would unload their catch into these hoppers by various mechanical means including purse-bottomed brailing nets. The fish were sucked from the hoppers at a rate of seventy tons per hour by the centrifugal pumps. This was discovered to accomplish the additional step of removing scales in the process. Therefore, the fish unloaded by this system were delivered directly into the same bins that held the bucket-hoisted fish. The fish were weighed as they were being transported to the storage bins.

These bins not only provived elasticity to the operation, by keeping catches fresh until they could be processed, but they also provided additional flexibility by allowing fish of different size and quality to be sluiced to selected bins, maintaining a control on the quality and size of the fish. This allowed smaller fish to be selected for a select pack.[21]

From the holding tanks, fish were sluiced to the cutting area. In the early days, the fish were cut and cleaned by hand. By the late 1920's cutting machines were in use in most of the canneries. After being placed belly down into compartments of a metal conveyor belt, the sardine's head, tail, and entrails (excluding roe and interior fat) were removed. Hovden at various

times had from twenty-four to thirty-two cutting machines, each with its own operator, and each machine capable of processing one and a quarter tons of fish per hour. After being cut and cleaned (gutted), the fish were again transported by fresh sea water through sluices to a second set of holding tanks.

These cut-fish tanks were filled with brine, a mixture of fresh water and sea water, the latter drawn by centrifugal pumps through an intake pipe laid 500 feet out from the edge of the cannery. The brine tanks not only kept the fish chilled and fresh, but also washed the blood out of the fish, leaving the meat clean. The cut fish were then flushed through gate-controlled flumes onto metal drapers (belts). These drapers raised the fish thirty-six inches from the floor, then passed them down the center of double sided packing tables. While enroute to the cutting tables, the water drained off of the fish into cement troughs in the cannery floor, and into the bay. In addition to discarded fish scales and bloody water from the brine tanks, this was one of the many steps in sardine processing that dumped its waste product into the waters of Monterey Bay. In later years, most of the waste products were utilized in the manufacturing of by-products for agricultural and industrial uses.

Having arrived at the packing tables, the fish were removed from the moving belt and packed into cans by hand. The filled cans were placed on another moving conveyor belt, which transported them to the exhausters, or precookers.

The open cans of sardines were next exposed to live steam for approximately thirty minutes. They were then removed, inverted, and drained by a mechanical draining machine.[22] The cans were then placed upright on a conveyor belt that passed beneath the spout of a machine which poured a pre-measured amount of whatever variety of sauce that particular batch of fish was receiving. Mustard, seasoned oil, and tomatoe were among those most commonly used. Since both draining and saucing took only a few minutes, the cans were still steaming hot when they were delivered to the sealing machine area.

Each pre-cooker had its own sealing machine. With each machine capable of sealing tops on forty five cans per minute, total output was approximately 2,700 cans per hour per machine. The power for the sealing machines was provided by a 40 h.p. electric motor mounted on a high cement pedestal of reinforced concrete which turned a line shaft to which were belted the closing machines (see Photo No. CA-11-51). The sealed cans were then propelled through a washer designed by Harold E. Bergen, the plants engineer. This machine consisted of a cylindrical housing partially filled with a caustic solution. The cans were propelled by an Archimedes screw with holes punched in its flight, allowing liquid to remain behind as the cans were driven

through. A spray of boiling fresh water rinsed the cans as they emerged from the washing machine. The cans were then delivered into cars of perforated metal, approximately four-foot square, which were wheeled into large retorts capable of holding six or seven cars each.

The final cooking operation took place in rectangular steel retorts, or pressure cookers, which were approximately six feet tall and 25 feet long.[24] Their girth was bound with steel I-beams, and they were sealed shut with vault-like doors. When the retorts were filled with canned fish, live steam was admimtted through mains from boilers located in the adjacent boiler house. The remnants of the three boilers and furnaces still remain, although their parts, especially fire brick and piping, are continually disappearing. Only one of the furnaces still has a tag attached, that of the "Dorward Engineering Company, 1913". Pressure of ten pounds per square inch and a temperature of 240 degrees F. were maintained for one hour and a half.

The sterilized cans of cooked sardines were given a final washing in a lye solution, after which they were coated with a film of lacquer by a lacquering machine. They were then stacked in a warehouse for eventual packing into boxes which would be labeled by the machine. The box labeling machine presently in the cannery, manufactured by Sprague Sells Corporation, is the only operable piece of machinery which remains.

THE CONTRIBUTIONS OF KNUTE HOVDEN TO THE SARDINE CANNING PROCESS

When the sardine canneries were in their infancy, shortly after the turn of the century, all processes were performed by hand. Fish were caught by gill nets from which they were extracted one by one. They were carried by hand baskets from the docking, or beaching area, to the processing building, where they were cleaned by hand. They were then spread on flakes (trays) in the sun to dry out excess moisture. After drying, the fish were placed in wire baskets and fried in hot peanut oil. As the fish cooked, their blood and oil mixed with the peanut oil, which became progressively darker and more contaminated. The result was cooked sardines of variable quality. The cans into which the fried fish were sealed were hand soldered, square cornered, retangular tin boxes. Once the cooked fish were packed in these cans, the lids were soldered on by hand and the product was ready for marketing.

Knute Hovden arrived in Monterey in 1905 and began working as a supervisor of Frank E. Booth's cannery. Hovden was well qualified for such a job, being a graduate of Norway's National

Fisheries College as a fisheries engineer and technician. He had worked for a time in Europe in a position comparable to that of the Area Coordinator of the U.S. Federal Fisheries Bureau inspecting methods and conditions of fish canning.[26] From the time he first began working in Monterey throughout his eleven years with Booth, he introduced many significant changes in the canning industry.[27]

One of the first problems Hovden sought to solve was the irregularity with which sardines were delivered to the cannery. As a result of the gill nets then used the supply of sardines was not only limited but also was delivered irregularly due to the unreliability of the gilling process. Hovden constructed a series of five twenty foot square floating net pounds (pens), anchored in the bay, into which fish were dumped as they were caught. The canneries were thus assured of drawing upon fairly regular stocks of fresh sardines, quite healthy from feeding upon the rich nutrients of the bay while in the pounds. After being scooped out of these pounds, the sardines were passed laboriously by wicker basket up to the wharf that led to Booth's cannery. This process was improved in 1906 by Hovden's introduction of the purse-bottom brailer. This crane-operated net-basket could be lowered into the floating the floating pounds (later into the full lampara and purse seines) where it scooped up great quantities of fish. When hoisted up to the receiving containers the gathered bottom of the net was released, unloading the fish quickly. Hovden also replaced the tedious method of hand flaking the fish for drying in the sun, by developing a mechanical dryer. This innovation increased production from 100 cases to 1500 cases a day.

Another step of the earlier canning process which Hovden modified was the non-uniform method of frying baskets of fish by pushing them through troughs of hot oil. In 1910, Hovden was experimenting with a method of propelling the fish through the oil by uniformly powered chain drives. By 1912, he had developed a mechanical cooker which permanently ended the practice of frying by hand. The final refinement to the cooking process occurred when live steam replaced hot peanut oil as the cooking agent. First used under atmospheric pressure and eventually under high pressure, steam cooked sardines in a standardized manner and resulted in a high quality, uniformly flavored product.[28]

Hovden is also credited with introducing into Booth's operation the automatic can capping machines which replaced the earlier hand soldering method. Two men operating these machines could turn out seventy cans a minute, as compared to twelve men operating the old machines turning out a combined total of sixty cans a minute.[29]

The final and most significant modification during this

early phase of the sardine industry on Cannery Row, came in the manner of catching fish. As with other modifications to the process, the change in the type of nets and boats involved over a period of time and from the efforts of many people. The evolution in Monterey from gill net to the lampara net has been mentioned above. The lampara net allowed sardine catches of up to twenty five tons per boat, a quantity unheard of up to that time. The significance of the lampara was not only that it caught great quantities of fish, but that such quantities could not be handled by the small boats then in use, or by the limited number of canneries. This change from gill to lampara net was part of a larger transition: a chain of events that led progressively to larger nets, larger catches, and ultimately to the need for larger nets and boats. And so, the industry expanded from a "hand craft" process, to an assembly line production method.[30]

A CHRONOLOGY OF THE CONSTRUCTION OF THE HOVDEN CANNERY

The construction history of the Hovden Cannery is told primarily by four sets of sources:

1. Documents held by the Monterey Bay Aquarium Foundation, which consist of blueprints and drawings on mylar found in the abandoned cannery buildings. These plans are of limited help in describing construction of the building, since they are incomplete, limited in number, and in many cases hardly legible. In addition, it is often difficult to determine whether the construction indicated on the blueprint was ever completed. In many cases, it is likely that changes were considered and drawn up, but for some reason not undertaken.

2. Sanborn maps for the years 1926 and 1930 found in the Monterey Public Library.

3. Building Permit Applications submitted by Hovden Food Products Corporation and held by the Monterey Building inspection Department. The city has on file only the permit applications for the years 1941-1950.

4. Blueprints of construction changes to the Hovden Cannery which were approved by the city. The city has on file only six such blueprints.

On August 11, 1921, the 1916 original plant burned down. Hovden switched operations immediately to a temporary location and immediately started plans for his new cannery. There are no blueprints or building permit applications on file in Monterey for the initial construction of the existing building.

A discussion of the evolution of structural characteristics of the Hovden Cannery is best conducted by reference to the 1926 and 1930 Sanborn maps. Since no documents are available reflecting changes which may have occurred between 1930 and 1941, alterations subsequent to 1930 can only be observed in the photographs which are included in this report. Some of these are discussed below:

(1) Originally an open driveway from Ocean Avenue, heading north to the boiler house, allowed access to the latter on all but the north side, which had a common wall with the main cannery. The boiler house that exists now was added about 1930, expanding into the open space on the north side of the boiler. The new boiler room was constructed of reinforced concrete with a steel truss roof. This addition also added a pipe shop which is reflected on the 1930 Sanborn Map. The pipe shop and a machine room were eventually moved to the first floor of the southernmost section of the building, directly below the east end of the truss across Ocean View Avenue.

(2) The portion of the Hovden property on the north side of Ocean Avenue contained a small fuel oil tank and office, and two small structures. By 1929, Hovden was making plans to increase his fish meal and fish oil production capacity. The passage of the Murphy-Youngman Bill by the California Legislature in the spring of 1929 accounts for the numerous additions made to the cannery at this time.[31] The legislation increased the percentage of the sardine catch which could be reduced to meal and oil by-products. Since profits from reduction were growing in proportion to those of canning, Hovden, along with others, increased their by-product production in anticipation of these increased profits.

From the reduction plant the meal and oil were transported over Ocean Avenue through pipes supported by the truss shown in the blueprint dated May 29, 1929. The meal was sacked and stored in the building which is shown on the 1930 Sanborn Map, the blueprints for which are dated May 4, 1929. This truss was repaired as indicated on Building Permit Application 45-99 dated May 3, 1945.

(3) The 1926 Sanborn map shows the company office building on the south side of Ocean Avenue, between the drying room and the nailing and machine shop. Sometime between 1926 and 1930, a small third story addition was made to the south corner of the building. It was approximately 9 by 12 feet, with a tile roof topped with a flag pole. A major modification to this section of

the cannery was indicated by plans dated October 30, 1941. This modification replaces the tile roof on the third floor tower and on the second floor roof. The entire wooden side of the building (north to the driveway next to the boiler room) was faced with stucco. A new wall and gate closed off the area previously open between the drying room and the office. The gate and fence which were connected to the boiler house were repaired and heightened. This portion of the building, as shown on the above noted plan, generally represents the facade of the building as it stands today, with the following exceptions: first, the lower row of seven windows in the drawing have been replaced by two large sections of glass block, and second, three windows exist on the building where a large square acess door (8 ft. by 8 ft.) originally was located.

(4) The warehouse on David Avenue, adjacent to the railroad tracks, was originally a one-story building with a basement. However, the basement (below grade level at the west end of the building) was at grade level with Cannery Row. Thus trucks had access to the building from Cannery Row, while the main level had a loading dock level with freight cars using the railroad siding at the south end of the building. Photograph No. 45 shows this building under construction. A second floor was added to the warehouse in 1941 (which actually added a third level, counting the basement). The plans for this addition are seen in Drawings 6 and 7, and referred to on Building Permit 41-173, dated September 19, 1941.

(5) A second story was added in 1942 to the one story room, whose west end had a common wall with the boiler room in 1926. This addition, located above the retort area, was used as storage area for empty cans. This modification was approved by Building Permit Application 42-33.

A STRUCTURAL DESCRIPTION OF THE HOVDEN CANNERY*

There are at least seven different sections to the cannery and more than thirty-five adjoining buildings, constructed over a period of approximately fifteen years. Each is constructed adjacent to the next, many with common walls. Much of the superstructure is in bad repair; some of it is either collapsed, or in a state of near collapse. The substructure shows signs of advanced infirmity as well.

The substructure is generally the same throughout the

* This description is drawn from the "Structural Description" section of the Determination of Eligibility of the Hovden Cannery for inclusion in the National Register of Historic Places, prepared by the San Francisco District of the U.S. Army Corps of Engineers, dated September, 1979.

complex. About half the building area is built directly on land behind a seawall, while the other half is constructed on a substructure of wood posts on concrete piers in Monterey Bay. This structure is an irregular one, without a standard bay size. Most of the columns are 8" by 8" posts, while there is a section of concrete posts supporting a concrete structure above. Generally, however, the wood posts support beams (6" X 10" or double 3" X 10"'s) which support 5" X 10" joists at 16 inch spacing. Plank flooring tops the joists (2" X 10" planks) and the finished floor is a layer of concrete (generally five inches thick) throughout the building. On top of this is constructed the superstructure, the myriad building types that will be described below.

Along Cannery Row three of the differing construction methods are evidenced. Two of these are wood structures with exterior wood siding. The third, which housed the company offices, is a wood structure with stucco extrerior and red clay tile roof. Traveling northwest on Cannery Row, the first building in the Hovden Cannery complex is a wood structure. It is a narrow clear-span structure supported by bearing walls. The roof is supported with trusses and consists of planks covered with tarpaper.

The second building is the office building. It is a two-story structure built on 2" X 4" wood studs. The floor and roof structure are also timber. The interior is wainscoated with wood panelling and has frosted glass partitions. Upper walls are stucco over gypsum board. Most of the front wall of the first floor is glass block. There is one office on the first floor which has a skylight through the second floor to the roof.

The third building along Cannery Row is actually a small portion of the structure that takes up the bulk of the floor space in the cannery. The roof is a series of shed roofs with clerestory windows and gable roofs. Whether shed or gable, the roofs are supported by trusses composed of 2" X 6" and 1" X 6" planks which are in turn covered with tarpaper. The trusses are supported on 4" X 10" beams which are supported by 6" X 6" wood columns, generally on a 20-foot square bay system. The exteerior walls of this section are made of 2" X 6" studs (with horizontal and diagonal cross-bracing) at 16 inches on center, covered 1" X 6" tongue-and-groove horizontal wood siding. A part of this section, which appears to be older, had an exterior of studs covered by 3" boards which are in turn covered with stucco on metal lath. This wall is now an interior wall, but retains the original window openings. Four bays of this portion of the building have collapsed.

Built in the far southeast corner of the complex, on the bay side, is a concrete addition whose structure is 14 1/2" square columns on an 18-foot square bay suporting concrete beams, 12 X

16". These beams support 10" X 12" concrete girders at 9-foot interals. The floor above these is a 6" thick concrete slab. Exterior walls are clay block infill or a combination of clay block infill and 2" X 6" wood studs with stucco exterior covering. The second floor of this section is a wood structure supported much as that structure described in the previous section.

The addition of the western end of the complex stands next to the largest structure in the complex. The roof of this section, much higher than that of other sections, is supported on large wooden trusses, which are supported on one end by a load bearing poured concrete wall, and on the other by a row of 8" X 8" wood columns. The columns, without the wall, form 10 bays, 20' X 56' each. The exterior walls are made of 4" X 6" studs, eight feet on center. There is horizontal bracing of the same dimension lumber. The exterior covering on the walls and on the roof is of corrugated abestos sheets, 3/8" thick. In this section is a poured concrete cold storage area, approximately 20' X 90'. This structure is poured all the way from the rocks below the building. The walls are 18" thick. One wall of this section of the complex fronts on the railroad siding.

Also along the railroad siding is a very small section of timber construction. The interior walls, however, are poured concrete with 17" X 17" piers at 11'6" intervals. This wall and the piers extend below the building to the foundation rocks at the bay's edge. The wood structure is similar to others mentioned, except that it is two-story.

A large concrete structure is located with a long wall on David Street and a shorter wall on the railroad siding. The bays in this building are 15'6" square and are formed by concrete columns 24" X 24". The concrete portion of this building is two stories, and what is found on the first floor is repeated on the second. The columns support concrete beams 16" X 24" which support concrete girders of 12" X 16" at five foot intervals. The concrete slab supported by the girders is 12" thick. Some of the exterior wall sections are poured concrete while others are clay block infill. There is a third floor on this building which is a wood structure like those described previously, except that the roof is held up by flat trusses running the length of the gable roof which is built of planks on a regular joist system. The planks are covered with tarpaper. The exterior of the third building is a combination of poured concrete or clay block infill and a stud wall with a stucco applied to the exterior.

On David Street, at the end of Cannery Row, is a garage-type door that leads into an open courtyard. Most of the courtyard is covered with a flat wood roof of 2" X 12" members at 24" centers, supported by triple 2" X 10"'s on one side and the wall of the previously described concrete building on the other. The roof

is covered with plywood and tarpaper. Most of the ground is covered with a concrete slab.

A seperate structure is located across Cannery Row from the main group of buildings. All that remains of this building is the reinforced concrete frame, consisting of 10" square columns supporting 10" X 12" beams. The structure is based on a simple grid system, with 16 bays about 12 feet square. The floor is a concrete slab. There are no walls and no roof.

Other features of this complex include three sheet metal smokestacks which rise out of the center or the complex to differing heights. These are supported against wind damage with guy wires. Also of interest is the extensive drainage system in those buildings where large amounts of water were used in processing. The drainage system consists of troughs formed in the concrete floor, and a system of wooden sluices underneath the floor structure. The loading dock along the railroad siding is a wood structure with a shed roof covering.

CHRONOLOGY OF EVENTS PERTAINING TO THE HOVDEN CANNERY

1895	Frank E. Booth opens the first cannery in Monterey (near the site of the present Fisherman's Wharf.)
1905	Knute Hovden comes to Monterey to become Booth's cannery supervisor.
1906-07	Lampara net is introduced to Monterey fishing community.
1906	First cannery built on Ocean View Ave. (Cannery Row).
1912	F. E. Booth constructs Monterey's first reduction plant for converting offal to meal (used for agricultural feed and fertilizer).
1916	Knute Hovden leaves Booth and builds his own cannery, The Hovden Food Company. 7,690 tons of sardines landed at Monterey; 97,100 cases are canned.
1921	Hovden's first cannery burns down.
1922	Rebuilding on the same site, Hovden begins canning operations in his new cannery in the summer of 1922.
1923	Hovden introduces purse seines: effort abandoned after boycott by lampara fishermen.
1929	Murphy-Younger Bill allows increased reduction processing.
1927-30	After being re-introduced by Hovden, purse seines, and the larger boats with which they are used, replace lampara boats and nets.
1930	A second story added to the main warehouse on David Ave.
1929-31	Hovden enlarges the boiler house, constructs meal packing and storage building across Ocean View Avenue. Constructs truss to transport by-products across Ocean View Avenue to new building.
1941-42	Largest catch of sardines ever landed at Monterey: 249,717 tons; 2,429,804 cases.

1946-47 The amount of sardines canned drops from 1.2 million cases in 1945-46 season, to 243,492 cases. Except for a brief revival in 1951, the industry never recovers.

1952 Knute Hovden retires to Mexico. Plant operation continues under William Lunde.

1962 Hovden Cannery becomes the last operating cannery on Cannery Row.

Hovden dies in Mexico.

1967 Stanford University purchases Hovden Cannery building from the Hovden estate. The Wilbur Ellis Company, San Francisco, purchases the canning machinery from the Hovden estate. Wilbur-Ellis Company leases the cannery building from Stanford, and continues operations under the label name "Portola".

1972-73 Wilbur-Ellis Company ceases operations, moves its canning equipment to Moss Landing plant. There are no fish processing plants left operating on Cannery Row.

FOOTNOTES

[1]John M. Dennis, "Monterey's Cannery Row, A Brief Survey" (Stanford: 7 July 1945). Randall A. Reinstedt, Where Have All the Sardines Gone? (Monterey: Color-Ad Printers, 1978), p. 15.

[2]Monterey, Cannery Row Plan (1973), p. 35.

[3]While this report was in preparation, removal of interior doors, fire brick and other valuable items was clearly in progress.

[4]Richard Persen, History of Cannery Row (Monterey: d'ANGELo Publishing Co., 1973), p. 18.

[5]Subsequent references to "Ocean View Avenue" will identify it as "Cannery Row," except as reference to original documents, which have the original name. (This is sometimes shortened to Ocean Ave.)

[6]Persen, History of Cannery Row, p. 18.; Reinstedt, Where Have All the Sardines Gone?, p. 13.; "The History of Portola," West Coast Fisheries, p. 7.

[7]This net was well suited to catching sardines, which are surface feeders.

[8]Eventually, hand rowed lampara boats and separate barges were replaced with larger, engine driven boats. Fish were then stored in the hold, and piled on deck of the boats returning to the canneries. The amount of fish which were delivered is reported from fifteen to twenty five tons, after a nights work (Earl H. Rosenberg, "A History of the Fishing and Canning Industries in Monterey, California" (M.A. Thesis, University of Nevada, 1961) p. 75. Rather than a discrepancy, the amount of fish carried depends on the size of the boat, and when in the development of the technology of fishing the reference is made.

[9]Dennis, "Monterey's Cannery Row," p. 8.

[10]Rosenberg, "A History of Fishing and Canning,", p. 90.

[11]Ibid., p. 273.

[12]Dennis, "Monterey's Cannery Row," p. 9.

[13]Rosenberg, "A History of Fishing and Canning," p. 84.

[14]Ray A. March, A Guide to Cannery Row (Monterey: Herald Printers, 1962), p. 21.

[15]Monterey Peninsula Herald, March 29, 1961. Hovden moved to Guadalajara, Mexico, where he died on 26 March, 1961.

[16]Gregory Broughton, "A Study of the Hovden Cannery Property," 7 July, 1972, Stanford University.

[17]Ibid.

[18]John Steinbeck, Cannery Row (New York: Viking Press, 1972), p. 1.; Persen, History of Cannery Row, p. 39.

[19]"The History of Portola", West Coast Fisheries (undated), p. 13, 16. The pumps are no longer in the cannery, but this type pump was manufactured at the time by the Americana Well Works of San Francisco.

[20]Because of its resistance to deterioration, redwood was generally used in the construction of these hoppers, as well as the sluices and holding tanks previously mentioned.

[21]Hovden's select quality, i.e. small sardines familiar to the European market, were packed under the "Prefet" label. This label was acquired when he purchased the Great Western Packing Company in 1923. "West Coast Fisheries", p. 11.

[22]Neither precookers or draining machines are left in the cannery today. The former were manufactured by, among others Anderson-Barngrovner, of San Francisco, while the latter, by Emmons and Gallagher Company of San Francisco, and the Universal Canning Machinery Company. The mixture of fish oil and water, drained from the cooked fish was initially dumped into the bay. In later years, it was utilized in the process of reducing waste products into marketable commodities.

[23]Canning machines were manufactured by, among others, The American Can Company and Emmons and Gallagher, of San Francisco.

[24]Some of these cookers were manufactured by the Standard Boiler and Steel Works of Los Angeles.

[25]Rosenberg, "A History of Fishing and Canning", p. 76.

[26]Dennis, "Monterey's Cannery Row", p. 7.

[27]Persen, History of Cannery Row, p. 13.

[28]West Coast Fisheries, p. 13.; Rosenberg, "A History of Fishing and Canning", p. 75.

[29]Rosenberg, p. 81.

[30]West Coast Fisheries, p. 12. By 1930, the lampara net was replaced by the purse seine, a net whose bottom could be closed (as by a purse string) trapping great quantities of fish (some could swim under and out of the lampara). This larger and more efficient purse seine required boats with power driven equipment to bring in and unload the nets, as well as greater storage capacity in their holds. The purse seine boats purchased by Hovden in 1926-1928, were 60 to 78 feet long, with capacities from 40 to 115 tons of sardines.

[31]In anticipation of more profitable seasons, the canneries on the Row spent $500,000 on improvements. This investment proved worthwhile as the amount of fish meal produced rose from 9,355 tons in the 1927-28 season to 16,671 tons in the 1930-31 season. Fish oil production for that same period rose from 1,601,993 gallons to 3,363,912 gallons. Rosenberg, "A History of Fishing", pp. 139, 274, 275.

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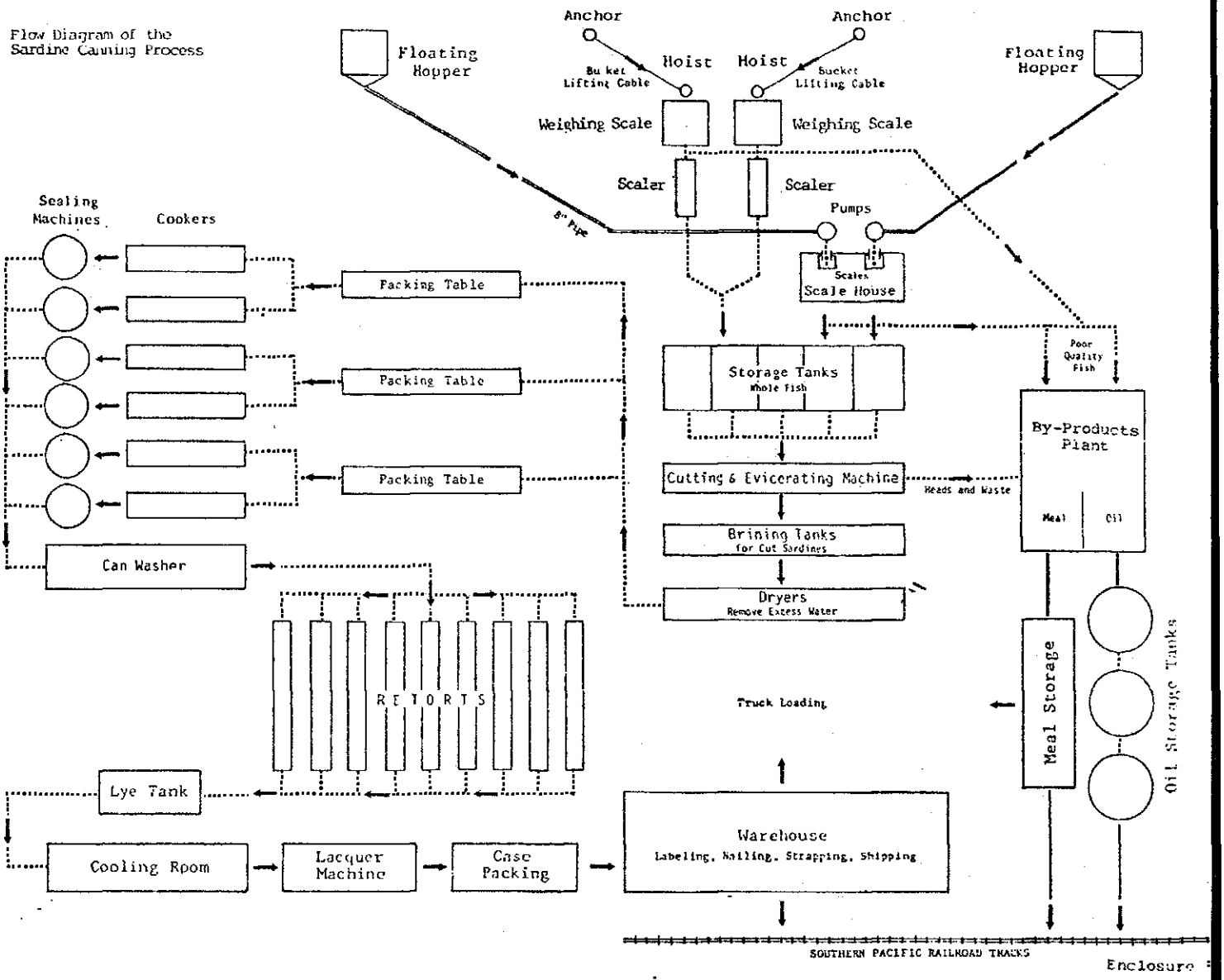
Tony Souza, Plant manager, Hovden Cannery from October 1928, until it closed in 1973. Interview 3 November 1979. Monterey, California.

Flow Diagram of the
Sardine Canning Process



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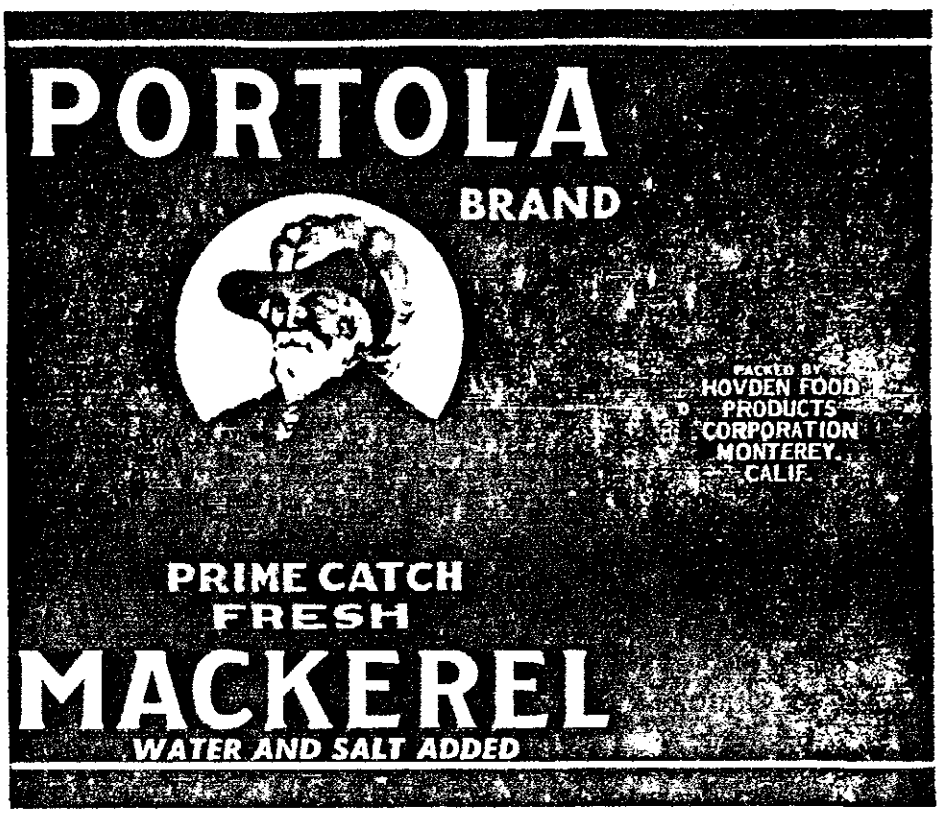

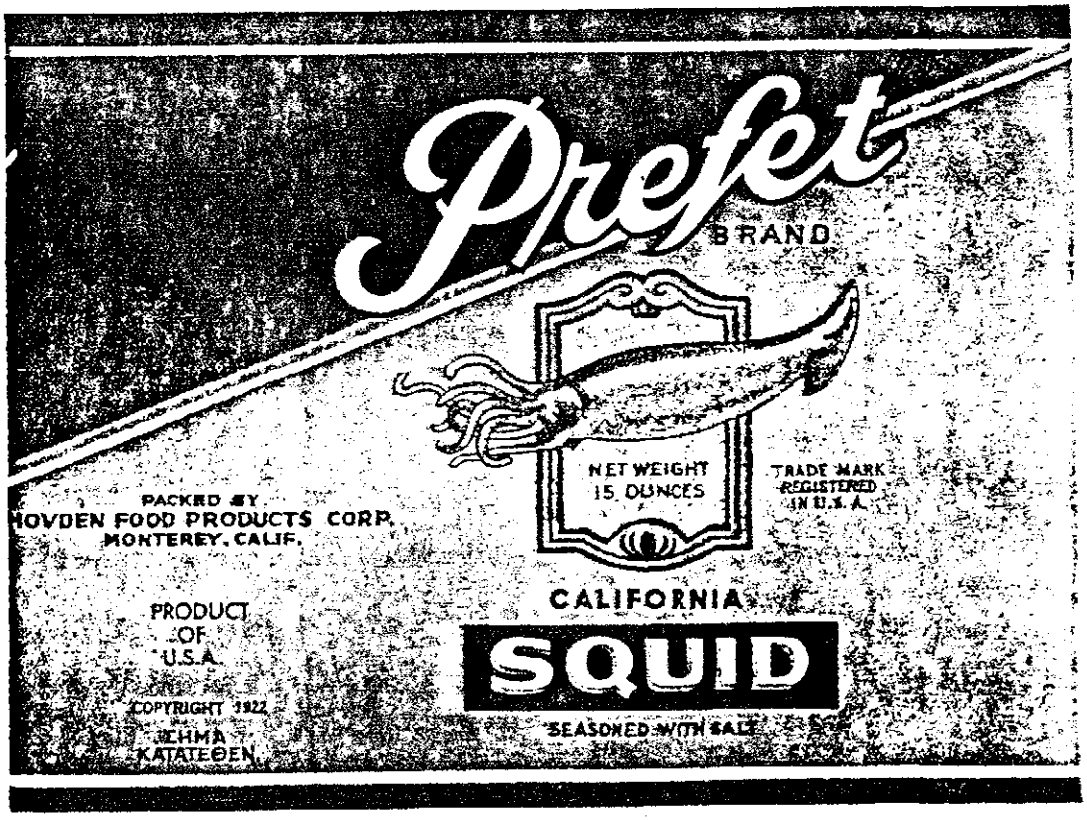

Labels of the various products canned by the Hovden Cannery are seen on this and the following page.


Best Ever
BRAND
PACKED BY
HOVDEN FOOD
PRODUCTS
CORPORATION
MONTEREY
CALIFORNIA
U.S.A.
WATER AND
SALT ADDED
CALIFORNIA
SQUID
NET WEIGHT 15 OZ.


CRESTA
BLANCA
PACKED BY
Hovden
FOOD
PRODUCTS
CORPORATION
MONTEREY
CALIFORNIA
California
Finest Quality
Jack Mackerel
(TRACHURUS SYMMETRICUS)

The Portola Brand Label

The Portola Brand was named after Captain Gasparde Portola, who served in Monterey as Mexico's first Governor of Alta California. The quality of fish packed under this namewon for Knute Hovden the Grand Prize at the Paris International Exposition in 1928.